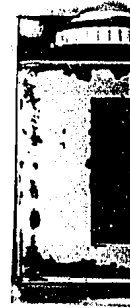


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THE YUGOSLAV COAL INDUSTRY

The following report is taken mostly from Informativni prirucnik o Jugoslaviji (Information Handbook on Yugoslavia), Book 2, Sections 4-6, 1952, a handbook which has been issued in sections since late 1948 by the Yugoslav Directorate for Information. Figures on coal production in 1952 are taken from the July 1953 issue of Indeks, mesecni pregled privredne statistike FNR Jugoslavije (Index, Monthly Survey of the Economic Statistics of Yugoslavia), a monthly periodical published by the Federal Bureau of Statistics and Records. Figures on export and import of coal in 1952 are taken from Statistika spoljne trgovine FNR Jugoslavije za 1952 (Statistics of Yugoslav Foreign Trade in 1952), a book published in 1953 by the Federal Bureau of Statistics and Records.

Coal Deposits

Yugoslavia's known coal reserves total more than 12 billion tons. Since certain areas have not yet been explored, it can be assumed that coal reserves actually total over 20 billion tons. Although there are coal deposits in all parts of Yugoslavia, Serbia and Bosnia-Herzegovina have the richest deposits. Yugoslavia's coal resources are composed primarily of extensive deposits of lignite; next in importance is brown coal; and finally, there are small deposits of black coal.

Black coal deposits are located chiefly in Istria at Rasa, eastern Serbia at the Timok and Ibar mines, and eastern Bosnia at Majevica. Black coal reserves are estimated to be about 30 million tons.

Brown coal is found in all the republics; reserves are estimated to be about 2 billion tons. The largest deposits of brown coal are located in Bosnia-Herzegovina, namely, in the Zenica Kakanj, and Breza mines in the central Bosnian



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coal basin; in the Ugljevik-Mezgraja coal basin, and in the Tito-Banovici, Mostar, Livno, Miljevina, Banja Luka, Tesanj, and other mines. The largest brown coal deposits in Serbia are in the Senj-Resava and Aleksinac coal basins and in Vrdnik. In Croatia, brown coal deposits are located in Siveric, Golubovac, Krapina, and other places. Brown coal deposits in Slovenia are located in the Trbovlje, Hrasnik, Zagorje, Senovo, and other mines. Known deposits of brown coal in Macedonia and Montenegro are very small.

Yugoslav lignite deposits, which are supposed to total about 10 billion tons, are lately estimated to be considerably greater. The largest deposits of lignite are located in the Kostolac, Kolubara, and Kosovo coal basins in Serbia; in the Tuzla coal basin and the Kreka mine in Bosnia-Herzegovina; in Velenje in Slovenia; and in the Croatian Zagorje, in Konjascina, and in Koprivnica in Croatia. Considerable reserves of lignite are located near Kicevo in Macedonia, and in Plevlje in Montenegro.

The Coal Industry Before and During the War

Despite Yugoslavia's rich coal deposits, before World War II insufficient attention was given to the expansion of coal mines and exploring for new coal deposits.

One third of the total capital invested in coal production was controlled by foreigners, the remaining two thirds being domestic private and state capital. Yugoslav and foreign private capitalists controlled 90 percent of the mines, which produced about 67 percent of the total coal, while the state controlled the remaining 10 percent.

The production of coal was quite low, being governed by conditions prevailing on the domestic market. Production between 1934 and 1938 was as follows (in tons):

<u>Year</u>	<u>Black</u>	<u>Brown</u>	<u>Lignite</u>	<u>Total</u>
1934	387,214	2,991,173	935,160	4,313,547
1935	390,170	3,093,275	908,918	4,392,363
1936	428,602	3,088,885	909,878	4,427,365
1937	427,375	3,544,325	1,030,717	5,002,417
1938	450,912	4,042,440	1,248,833	5,742,185
1939*	406,284	3,987,316	1,052,456	5,446,056

*The output of the Rasa mine, which totaled 944,000 tons, is not included.

Prewar coal production was low, primarily because of rather small consumption by a poorly developed domestic industry, because Yugoslav transportation and shipping did not consume domestic coal exclusively, and because Yugoslav coal was not of high enough quality to permit it to compete in the world market.

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The level of mechanization in coal mines was very low, especially mines in Serbia and Bosnia-Herzegovina; mines in Slovenia were mechanized to some extent. Since labor was cheap, domestic and foreign capitalists were not interested in investing their money in machinery.

Mining was one of the industries which suffered the most destruction during the war. Installations and buildings were destroyed, mines caved in or were flooded, and machinery and installations which were not destroyed were carried off. The Ravna Reča, Senjski Rudnik, and Aleksinac black coal mines were especially damaged or flooded, followed by the Rasa, Zenica, Kreka, Ugljevik, and Ivanec mines.

The Coal Industry After the War

After the liberation, coal production totaled only 3,610,000 tons in 1945, or 51 percent of prewar production.

The rapid industrialization and electrification of Yugoslavia required a considerable expansion of coal production. Postwar coal production (including production of local mines) was as follows (1,000 tons):

<u>Year</u>	<u>Black</u>	<u>Brown</u>	<u>Lignite</u>	<u>Total</u>
1945	--	--	--	3,610
1946	757	3,823	2,224	6,804
1947	1,062	2,325	2,904	9,291
1948	973	6,331	3,420	10,724
1949	1,275	6,682	4,151	12,107
1950	1,154	7,204	4,508	12,886
1951	992	6,919	4,132	12,043
1952	1,011	6,842	4,243	12,096

Coal production in the republics was as follows (1,000 tons):

<u>Year</u>	<u>Serbia</u>	<u>Croatia</u>	<u>Slovenia</u>	<u>Bosnia-Herzegovina</u>	<u>Macedonia</u>	<u>Montenegro</u>
1939	1,645	1,406	1,792	1,548	--	--
1946	1,653	1,168	2,044	1,899	--	--
1947	2,434	1,654	2,436	2,767	--	--
1948	2,899	1,757	2,562	3,406	--	--
1949	3,230	2,151	2,763	3,951	24.6	14.5
1950	3,441	2,056	2,830	4,500	30.9	17.8
1951	2,999	1,817	2,652	4,525	35.2	15.4
1952	2,970	1,955	2,644	4,496	16.3	17.3

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Production in lignite mines developed more rapidly because the mines are shallow, can be worked more quickly, and do not require special installations. Brown coal mines developed more slowly, because they require deeper shafts and installations. Black coal mines had the lowest production because they were the most heavily damaged during the war, and because geological and work conditions were very unfavorable.

The decrease of production in 1951 as compared with 1950 was the result of a shortage in manpower.

To meet the country's needs for coal in future years and to increase exports, work has begun on expanding existing mines and opening new ones, which will increase the production capacity to 19 million tons of coal annually.

Expansion is being directed toward concentrating investments and new projects where exploitation is most favorable and where it is possible to open surface mines, introduce machinery to reduce manpower, introduce new excavation methods and concentrate on strip mining, build installations for grading coal, reduce manpower turnover by providing favorable living conditions for workers, especially housing, and reduce production costs.

Development of new mines is to be concentrated mostly on lignite mines, because lignite reserves are the largest and the most favorably situated.

In 1939, 7.4 percent of the coal produced in Yugoslavia was black coal; 73.4 percent, brown coal; and 19.2 percent, lignite. In 1950, 2.3 percent of the coal produced in Yugoslavia was black coal; 56.5 percent, brown coal; and 35.2 percent, lignite. The plan calls for 6.6 percent of the coal produced to be black coal, 49.4 percent to be brown coal, and 44 percent to be lignite.

Current investments in mining are concentrated where exploitation possibilities are the most favorable.

In Serbia, lignite strip mines, with an annual capacity of 2 million tons, will be opened in the Kolubara coal basin; through strip mining, the annual capacity of the Kostolac mine will be increased to 2 million tons; and the Aleksinac and Senje-Resava brown coal mines will be expanded.

In Croatia, the black coal mines will be expanded considerably. Brown coal production will be concentrated in the Zagorje mine in the Zasava coal basin.

In Bosnia-Herzegovina, the Tito-Banovici brown coal mine and the Kakanj, Breza, and Zenica mines will be expanded. A large mine will be opened in Mezgraja. The facilities at the Kreka lignite mine will be increased to supply [annually] 3 million tons of coal for coke production.

Plans have been made to procure equipment to mechanize labor and transportation in mines. Large-scale mechanization by means of power shovels and transportation equipment is planned for strip mining; mechanization of transportation is planned in underground mines. At present, about 40 percent of the total number of workers in the nonmechanized mines in Bosnia and Serbia are employed in transportation. It is estimated that mechanization will increase work output by about 30 percent. Machinery is now being procured, since almost all machinery has to be imported.

Preparations are being made to replace mine timbers with pillars made of iron or some other material, because the demand for timbers has increased so much that their procurement is a problem.

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Quality of Coal

The quality and assortment of coal are not yet adequate because of an insufficient number of separators.

The present assortment is as follows: washed and graded coal, 35 percent; screened coal, 34 percent; and pit coal, 31 percent.

The average calorific values of Yugoslav coals are as follows: black coal in Serbia, 5,340 calories; black coal in Croatia, 6,550; brown coal in Serbia, 3,790; brown coal in Croatia, 3,770; brown coal in Slovenia, 3,820; brown coal in Bosnia-Herzegovina, 4,200; lignite in Serbia, 2,190; lignite in Croatia, 2,680; lignite in Slovenia, 2,640; and lignite in Bosnia-Herzegovina, 2,920.

Separators and refining installations are under construction, the largest separators being planned for Bosnia-Herzegovina, where the largest lignite deposits are located.

By drying lignite, Yugoslav industry and private consumers will get a quality fuel. A drier, with a capacity of one million tons of dried lignite, is to be built in the Kolubara coal basin. Kolubara lignite, which contains about 50 percent moisture, will have its moisture content reduced to 16 percent.

Consumption of Coal

Domestic coal consumption has been as follows (1,000 tons):

<u>Year</u>	<u>Industry</u>	<u>Transportation</u>	<u>Mass Consumption</u>	<u>Total</u>
1938	2,913	2,071	287	5,271
1949	6,837	3,474	1,044	11,355
1950	7,717	3,446	1,387	12,550
1951	7,093	3,421	1,314	11,828

The increase in mass consumption has resulted chiefly from the growth of the urban and industrial population and a decrease in the use of firewood. The mass demand for coal has not been fully met.

Production of coal per capita increased from 0.36 ton in 1938 to 0.8 ton in 1951, while consumption per capita increased from 0.365 ton in 1938 to 0.75 ton in 1951.

Coal Import and Export

Before the war, black coal was imported by Yugoslavia as follows: 141,000 tons in 1936; 179,000, in 1937; and 200,000, in 1938, in addition to 29,125 tons of anthracite.

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After the war, imports of black coal, anthracite, and gas coal were as follows (in tons, except where otherwise indicated):

<u>Year</u>	<u>Black Coal</u>	<u>Anthracite</u>	<u>Gas Coal</u>
1947	119,867	52,647	--
1948	66,530	67,683	--
1949	22,112	14,703	--
1950	4,466	41,324	--
1951	3,638	53,685	--
1952(kg)	57,670,898 kg	70,582,575 kg	7,897,916 kg

Black coal was used in the first postwar years for transportation, for producing gas, and in the cement industry. Black coal imports have decreased considerably because gas plants have replaced black coal with mixed domestic coal. Anthracite is now used chiefly in the cement industry.

Only very small quantities of coal were exported by Yugoslavia before the war. Exports have increased since the war as follows (in tons, except where otherwise indicated):

<u>Year</u>	<u>Black Coal</u>	<u>Brown Coal</u>	<u>Lignite</u>	<u>Total</u>
1946	--	47,252	12,677	59,929
1947	100,775	264,347	47,967	413,089
1948	108,485	254,878	1,708	365,071
1949	203,912	139,725	--	343,637
1950	105,747	26,624	--	132,371
1951	61,398	189,576	1,852	252,826
1952(kg)	61,135,000 kg	94,722,734 kg	515,300 kg	156,373,034 kg

- Coal is exported chiefly to Austria, Italy, and Germany.

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